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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/694,042

10/28/2003

Hiroki Naito

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08/16/2005

EXAMINER

LE, HOA T

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

ART UNIT

PAPER NUMBER

1773

DATE MAILED: 08/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/694,042

Applicant(s)

NAITO ET AL.

Examiner

H. T. Le

Art Unit

1.773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 16-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of claims 1-15 in the reply filed on April 18, 2005 is acknowledged. The traversal is on the grounds that there appears to be "an overlapping search area" and that "a search and examination of the entire application would not place a serious burden on the Examiner." This is not found persuasive because: (1) the search is not overlapped evident by different classifications between the inventions as set forth in the restriction requirement; and (2) Applicant failed to specifically point out the reasons on which he or she bases his or her conclusion that a requirement to restrict is in error. A mere broad allegation that the requirement is in error because the search is overlapping does not comply with the requirement of 37 CFR 1.111. Thus the required provisional election becomes an election without traverse. See MPEP 818.03(a).

The requirement is still deemed proper and is therefore made FINAL. Accordingly, claims 16-33 stand withdrawn from consideration as directed to a non-elected invention.

Claim Rejections - 35 USC § 112

2. Claims 1, 2 and 7-15 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for inorganic being the stress luminescent material, does not reasonably provide enablement for any non-inorganic materials (i.e. organic or organic polymer/resin). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. The only stress luminescent materials that are

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described in the instant specification are inorganic materials. No organic materials are taught. Therefore, the specification as originally filed provides support for only inorganic material being the claimed stress luminescent material. Instant claims 1 and 7-15, which fail to include the limitation that the particles being inorganic material, are deemed broader than the enabling scope of the disclosure.

3. Claims 3-6 are objected to in view of their dependency upon claim 1.

4. Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification fails to provide sufficient teaching as to the method of coating the claimed superfine particle with a surfactant comprising both hydrophilic and hydrophobic groups. In addition, there is no teaching as to what materials are suitable as the surfactant for the claimed superfine particle.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 2, 4-10 and 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by the Xu '655 patent (US 6,280,655).

Claim 1: The Xu '655 patent teaches powder of a stress-luminescent material (i.e. emitting light upon stress). The Xu patent does not explicitly report the grain size of the luminescent material. However, because the powder does not undergo much scattering under different medium (see col. 6, lines 30-47) which is a distinctive characteristics of nanoparticles (or ultrafine particles), it is deemed necessarily inherently that the powder of the stress-luminescent material comprises ultrafine particles within the range of 1 to 100 nm. Particles having particle size within that range are too small comparing to the light wavelength to experience any scattering under different medium.

Claim 2: See col. 4, lines 43-45.

Claims 4-6: See col. 4, line 62 to col. 5, line 10 and Table 1, col. 6, lines 16-21.

Claims 7, 13 and 14: See the rejections to claims 1 and 2.

Claims 8-10: See col. 5, lines 20-30. Epoxy is a transparent resin and also photo-curable.

Claim 12: See col. 4, lines 32-38.

Claim 15: The material is stress-luminescent which means emitting light under application of stress. Touching and bending are mechanical stress.

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7. Claims 1-10 and 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by The Li patent (US 6,783,699).

Claim 1: The Li patent teaches a fluorescent nanoparticles (see abstract). The nanoparticles have a particle size ranging from 10 to 100 nm (col. 3, lines 30-32 and col. 6, lines 54-56).

Fluorescent by definition is material capable of emitting light when excited by a mechanical energy (mechanoluminescent or triboluminescent).

Claims 2 and 3: See col. 2, lines 26-36 where it discloses a coating with silane containing functional groups of aldehyde, carboxylate, alcohol, phosphate, ester and ether. Silane is hydrophobic by nature while the functional groups as listed are hydrophilic.

Claims 4-6: See col. 2, lines 6-26 and col. 4, lines 28-40.

Claims 7 and 13-15: See the rejection to claims 1-3. The silane coating is considered the "another material".

Claims 8-10: Polysiloxanes as disclosed at col. 3, lines 54-58 are types of resin that are transparent and photocurable.

Claim 15: Fluorescent by definition is material capable of emitting light when excited by a mechanical energy (mechanoluminescent or triboluminescent. Stress generates mechanical energy, and bending and touching are stress, thus the luminescent particles emit lights when touched or bent.

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Claim Rejections - 35 USC § 102/103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 7-15 are rejected under 35 U.S.C. 102(a) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the Xu'375 patent (US 6,628,375) in view of the Xu '655 patent (US 6,280,655).

Claim 7: The Xu'655 patent teaches ultrafine luminescent particles as discussed in section 5 above. The Xu '375 patent teaches the use of luminescent particles in an optical transparent material to produce a system for measuring stress. Therefore, it would have been obvious for one having ordinary skill in the art to incorporate the particles taught by the Xu' 655 patent in another material in order to provide an article or system for measuring a stress as taught by the Xu'375 patent.

Claims 8-9: Transparent resin is suggested in the Xu '375 patent at col. 5, lines 42-44.

Claim 10: Epoxy resin, a photocurable resin, is taught in the Xu' 655 patent at col. 5, lines 20-30.

Claim 11: The Xu'375 patent suggests transparent materials other than resin. This clearly indicates inorganic (i.e. non-resin) transparent materials which encompass glass.

Claim 12: See Xu '655, col. 4, lines 32-38.

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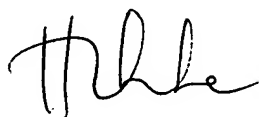
Claims 13-14: The method of mixing the luminescent particles as taught in the Xu'375 patent (see Xu '375, examples) would expectedly result in discrete dispersion of the particles in the matrix (i.e. other material).

Claim 15: The luminescent particles taught in both Xu '375 and Xu '655 patents are stress-luminescent which means emitting light under application of stress. Touching and bending are mechanical stress.

10. References not relied upon are cited as art of interest.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. T. Le whose telephone number is 571-272-1511. The examiner can normally be reached on 10:00 a.m. to 6:30 p.m., Mondays to Fridays.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



H. T. Le
Primary Examiner
Art Unit 1773